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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,398	03/31/2004	Wang Yuch	42P18694	7576

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EXAMINER

LEE, SIN J

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/815,398

Applicant(s)

YUEH ET AL.

Examiner

Sin J. Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-14,16-27 and 30 is/are rejected.
- 7) ☒ Claim(s) 4,15,28 and 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 09-14-04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: there is no proper antecedent basis for the subject matter of claims 28 and 29 in the present specification.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

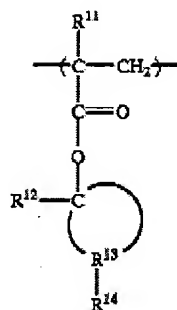
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 5-8, 10-14, 16-23, 25-27, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Asakawa et al (US 6,280,897 B1).

Asakawa teaches (see col.3, lines 63-67, col.4, lines 1-25) a photosensitive composition comprising a polymer having a repeating unit of the formula (1A) shown below and a photoacid generator;

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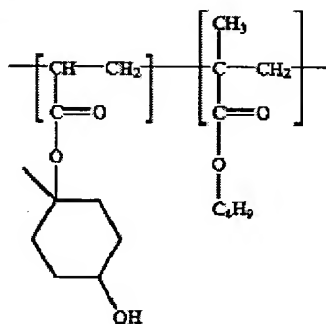
(1A)



wherein  $R^{11}$  is a hydrogen atom, an aliphatic hydrocarbon group, an alkoxy group, a halogen atom or a cyano group;  $R^{12}$  is an aliphatic hydrocarbon group or a cyclic olefin;  $R^{13}$  is either one of (a) a straight chain olefin having 2 to 12 carbon atoms, a cyclic olefin or a heterocyclic group and (b) a hydrocarbon group represented by  $-(CH_2)_m-$  ( $m$  is an integer of 3 to 9); and  $R^{14}$  is a hydrophilic group.

As an example for such polymer, Asakawa teaches (see col.64, lines 40-55) the following polymer;

(Polymer (PI-43))



Asakawa also teaches (col.7, lines 5-17, col.41, lines 38-45) a method for forming a pattern, which comprises the steps of : coating his photosensitive composition on a substrate, and drying the composition with heating thereby forming a resin layer; exposing a predetermined area of the resin layer to a pattern exposure by means of

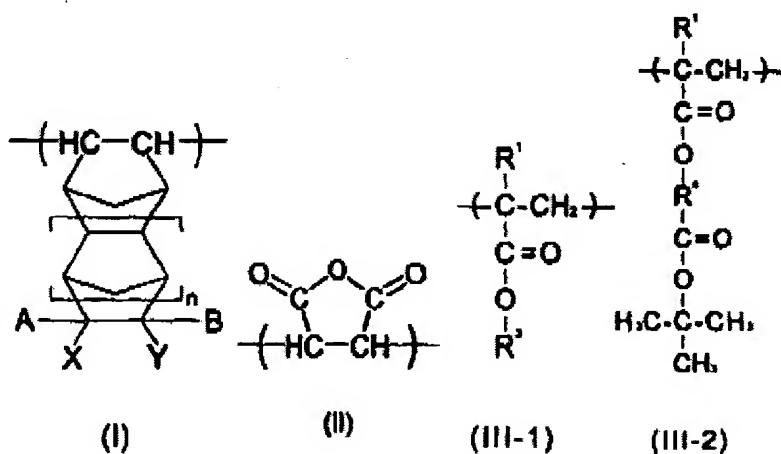
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light irradiation; performing a heat treatment of the resin layer after the pattern exposure; developing the resin layer after the heat treatment by using an alkaline developer; and removing the developer by rinsing with water after the development of the resin layer.

Since Asakawa's Polymer (PI-43) shown above contains 1-methyl cyclohexyl group (present acid labile group), to which a hydroxyl group (present hydrophilic group) is attached, the prior art teaches present inventions of claims 1, 2, 5-8, 10-12, 21-23, 25-27, and 30. Also, since the 1-methyl cyclohexyl group (to which the -OH group is attached) of the polymer shown above is a dissolution inhibiting group, Asakawa teaches present inventions of claims 13, 14, 16-20 as well.

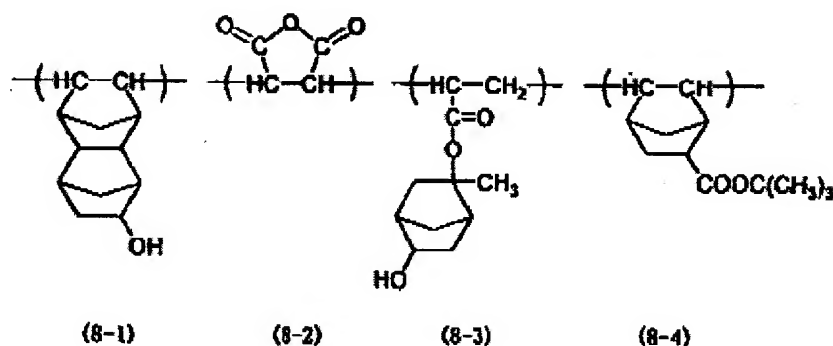
4. Claims 1, 2, 5-8, 10-14, 16-23, 25-27, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Douki et al (EP 1 085 379 A1).

Douki teaches (see abstract) a radiation sensitive resin composition comprising (A) a resin having the following recurring unit (I), recurring unit (II), and at least one of the recurring units (III-3) and (III-2), and (B) a photoacid generator;



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As a specific example for his resin, Douki teaches (see Synthesis Example 4) the following resin;



The recurring unit (8-3) has 1-methylnorbornyl group (present acid labile group), to which a hydroxyl group (present hydrophilic group) is attached.

Douki also teaches (see [0126], [0127], [0129], and [0137]) a method for formation of resist pattern which comprises the steps of: applying his composition to a substrate to form a resist film, pre-baking the resist film, exposing the resist film to form a predetermined resist pattern; performing post-exposure bake; developing the exposed resist film to form a predetermined resist pattern; and washing the resist film with water after development. Therefore, Douki teaches present inventions of claims 1, 2, 5-8, 10-12, 21-23, 25-27, and 30. Also, since the 1-methyl norbornyl group (to which the -OH group is attached) of the polymer shown above is a dissolution inhibiting group, Douki teaches present inventions of claims 13, 14, 16-20 as well.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

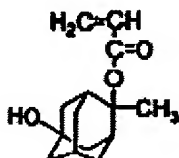
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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 9, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Douki et al (EP 1 085 379 A1).

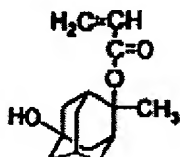
With respect to present claim 3, although the recurring unit (8-3) of Douki's polymer shown above in Paragraph 4 has only one -OH group, Douki teaches that there can be *one or more* hydroxyl group attached to the alicyclic hydrocarbon group (see [0046]-[0048]). Therefore, based on this teaching, it would have been obvious to one of ordinary skill in the art to provide more than one -OH groups attached to the norbornyl group in the recurring unit (8-3) of Douki's polymer with a reasonable expectation of obtaining a radiation sensitive resin composition exhibiting superior dry etching resistance, high radiation transmittance, excellent characteristics as a resist such as sensitivity, resolution, and pattern shape. Therefore, Douki's teaching would render obvious present invention of claim 3.

With respect to present claims 9 and 24, Douki teaches (see pg.19, (iii-59) and pg.20, (iii-75)) the equivalence of the recurring unit (8-3) of his polymer shown above in Paragraph 4 and the following recurring unit;



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Since the prior art teaches the equivalence of those two recurring units, it would have been obvious to one of ordinary skill in the art to replace the recurring unit (8-3) in Douki's polymer with the recurring unit



with a reasonable expectation of obtaining a radiation sensitive resin composition exhibiting superior dry etching resistance, high radiation transmittance, excellent characteristics as a resist such as sensitivity, resolution, and pattern shape. Therefore, Douki's teaching would render obvious present inventions of claims 9 and 24.

***Allowable Subject Matter***

7. Claims 4, 15, 28, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Neither Douki nor Asakawa teaches or suggests present sulfhydryl group of claims 4 and 15. Also, neither Douki nor Asakawa teaches or suggests present exposing step of claim 28 that comprises wetting the hydrophilic group of the detached group with an immersion lithography fluid.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*S. J. Lee*

S. Lee  
January 9, 2005

*Sin J. Lee*  
Sin J. Lee  
Patent Examiner  
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